5 Parallel component of a vector

Given a vector:

\[ \mathbf{A} : \begin{bmatrix} 4 \\ -60^\circ \end{bmatrix} \]

All answers must be express in the (x,y) coordinate system.

1) Express \( \mathbf{A} \) in component notation.

Using \( \mathbf{A}_y = (\mathbf{A} \cdot \hat{e})\hat{e} \),

2) Obtain the parallel component \( \mathbf{A}_p \) of \( \mathbf{A} \) along the L direction.

3) Using \( \mathbf{A} = \mathbf{A}_p + \mathbf{A}_\perp \), deduce the perpendicular component \( \mathbf{A}_\perp \) of \( \mathbf{A} \) with respect to the direction L.

(x,y) orthonormal coordinate system